

CLAIMS

I claim:

- 1 1. A caching server comprising:
 - 2 an answer cache configured to access answer information through a flat data
 - 3 structure;
 - 4 a referral cache configured to store referral information; and
 - 5 computer instructions configured to translate a domain name into DNS
 - 6 information by examining the answer cache and, responsive to the results
 - 7 of examining the answer cache, examining the referral cache.
- 1 2. The caching server of claim 1, wherein the flat data structure is a hash table.
- 1 3. The caching server of claim 1, wherein the flat data structure includes pointers to a tree
- 2 data structure.
- 1 4. The caching server of claim 1, wherein the flat data structure includes pointers to a tree
- 2 data structure, and the tree data structure is configured to store answer
- 3 information and referral information.
- 1 5. The caching server of claim 1, wherein the flat data structure includes pointers to a tree
- 2 data structure, and the tree data structure is included in the referral cache.
- 1 6. The caching server of claim 1, wherein the caching server is also an authoritative
- 2 server.

- 1 7. The caching server of claim 1, wherein the caching server is also a web server.
- 1 8. The caching server of claim 1, wherein the referral cache is further configured to store
2 the referral information in a hierarchical data structure.
- 1 9. The caching server of claim 1, wherein the DNS information includes an IP address.
- 1 10. The caching server of claim 1, wherein the DNS information includes an MX record.
- 1 11. A computer readable medium having stored thereupon computer code configured to
2 determine DNS information associated with a domain name, the computer code
3 comprising:
 - 4 a code segment configured to receive a request for the DNS information
 - 5 corresponding to a domain name;
 - 6 a code segment configured to examine a first cache to find the DNS information,
 - 7 the first cache including a flat data structure and configured to store the
 - 8 DNS information or a pointer to the DNS information; and
 - 9 a code segment configured to initiate a search of a second cache if the DNS
 - 10 information is not found by examining the first cache, the second cache
 - 11 configured to store data referring to further locations on a computer
 - 12 network wherein the DNS information may be found.
- 1 12. The computer readable medium of claim 11, wherein the DNS information includes
2 an IP address.

1 13. A computer network comprising:

2 means for receiving a request for DNS information corresponding to a domain

3 name;

4 means for examining a first cache to find the DNS information, the first cache

5 configured to store the DNS information or a pointer to the DNS

6 information; and

7 means for searching a second cache if the DNS information is not found by

8 examining the first cache, the second cache configured to store data

9 referring to further locations on the computer network wherein the DNS

10 information may be found.

1 14. The computer network of claim 13, further including means for storing data in the

2 first cache such that a time required to examine the first cache is essentially

3 constant as a function of a number of labels comprising the domain name.

1 15. The computer network of claim 13, further including means for storing data in the

2 first cache such that a time required to examine the first cache is essentially

3 constant as a function of a size of the first cache.

1 16. The computer network of claim 14, wherein the DNS information includes an IP

2 address.

1 17. A computer network comprising:

2 a computing system configured to access a component of the computer network
3 using a domain name;
4 a caching server including a first data structure configured for translating the
5 domain name into DNS information, and means for examining the first
6 data structure in a time that is essentially constant as a function of a
7 number of labels comprising the domain name; and
8 a second data structure configured for translating the domain name into DNS
9 information.

1 18. The computer network of claim 17, wherein the DNS information includes an IP
2 address or an MX record.

1 19. A method of determining DNS information, the method comprising:
2 receiving a request for DNS information corresponding to a domain name;
3 examining an answer cache for answer information, the answer cache including a
4 hash table configured to store the answer information or to store a pointer
5 to the answer information; and
6 searching a tree data structure if the DNS information is not found by examining
7 the answer cache.

1 20. The method of claim 19, wherein the hash table is configured to store the pointer to
2 the answer information.

1 21. The method of claim 19, wherein the answer cache does not include a tree data
2 structure.

1 22. The method of claim 19, wherein the tree data structure is configured to store referral
2 data and is included in a referral cache.

1 23. The method of claim 19, wherein the tree data structure is configured to store pointers
2 to referral data.

1 24. The method of claim 19, wherein the DNS information includes an IP address.

1 25. The method of claim 19, wherein the hash table is configured to store the answer
2 information.

1 26. A method of determining DNS information, the method comprising:
2 receiving a request for DNS information corresponding to a domain name;
3 examining an answer cache to find answer information, responsive to the received
4 request, the answer cache including a flat data structure; and
5 responsive to the examination of the answer cache, searching a referral cache.

1 27. The method of claim 26 wherein the flat data structure is configured to store the
2 answer information.

1 28. The method of claim 26, wherein the flat data structure is configured to store a
2 pointer to the answer information.

1 29. The method of claim 26, wherein the flat data structure is a hash table.

1 30. The method of claim 26, wherein a time required to examine the answer cache is
2 essentially constant as a function of a number of labels comprising the domain
3 name and essentially constant as a function of a size of the answer cache.

1 31. The method of claim 26, wherein the referral cache includes a hierarchical data
2 structure.

1 32. The method of claim 26, wherein the DNS information includes an IP address.

- 1 33. A method of storing data in a cache, the method comprising:
 - 2 requesting DNS information;
 - 3 receiving data in response to the request;
 - 4 classifying the response received; and
 - 5 storing the data received in either a referral cache or an answer cache based on the
 - 6 classification.

1 34. The method of claim 33, wherein the answer cache includes a flat data structure.

1 35. The method of claim 33, wherein the answer cache includes a hash table.

1 36. The method of claim 33, wherein the response received is stored in a caching server.

1 37. The method of claim 33, wherein the DNS information includes a numerical address.

1 38. The method of claim 33, wherein the answer cache is configured to store answer
2 information and the referral cache is configured to store referral information.

1 39. The method of claim 33, wherein the answer cache is configured to store answer
2 information and the referral cache is configured to store referral information, and
3 the answer cache and the referral cache have different data structures.

1 40. A method of caching DNS information, the method comprising:
2 requesting DNS information;
3 receiving data in response to requesting DNS information;
4 classifying the response received as an answer response or a referral response;
5 storing the response received in either a referral cache or an answer cache based
6 on the classification, the answer cache including a flat data structure;
7 receiving a request for DNS information corresponding to a domain name;
8 examining the answer cache to find answer information, responsive to the
9 received request; and
10 responsive to the examination of the answer cache, searching the referral cache.

1 41. The method of claim 40, wherein the referral cache includes a hierarchical data
2 structure.

1 42. The method of claim 40, wherein the received request for DNS information includes a
2 request for an IP address.